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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/059,892	01/29/2002	Roger L. Hipwell	S01.12-0858/STL 10384	9597

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EXAMINER	
CAO, ALLEN T	

ART UNIT	PAPER NUMBER
2652	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/059,892	HIPWELL ET AL.	
	Examiner	Art Unit	
	Allen T Cao	2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-14 and 21-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-14 and 21-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/29/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 10-13 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Scherer (US. 4,477,828).

Scherer discloses an integrated interconnect (IC's) assembly for a microstructure having a microstructure (micro circuit 10) including a microstructure cavity (cavity 17, figures 1-3 show that the cavity includes the cavity from the top surface of element 14 to the top surface of element 12 (figures 1-2), or from the top surface of the element 12 to the inside bottom surface of the element 12, figure 3) having a bond pad (a bump connected between elements 20 and 22) formed on an inner wall of the microstructure cavity and conductive coupled to a lead 26 on the microstructure body 10 through elements 22 and 28, all as set forth in claim 10.

Claim 11:

Scherer also discloses a nested body 16 supported in the microstructure cavity and having a bond pad (a bump connected between elements 16 and 20) interface with the bond pad, through wire bond 20, formed on the inner wall of the microstructure cavity.

Claim 12:

Scherer discloses a first body 16 having a bond pad formed thereon (a bump connected between members 16 and 20) and a second body 10 having a nest cavity 17

and the first body 16 supported in the nest cavity; and means for electrically coupling the bond pad on the first body 16 supported in the nest cavity to circuitry coupled to the second body 10 (10 is a micro circuit package; therefore, it is inherently having a circuitry, see also claim 1).

Claim 13:

Scherer also discloses means for electrically coupling includes a raised bond pad (a bump connected between members 20 and 22) formed on a wall of the nest cavity of the second body.

Claim 24:

Scherer further discloses the bond pad is raised from a surface of the inner wall of the microstructure cavity as recited in claim 24 (see the Office Action of claim 10, also).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 25-27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scherer.

Scherer does not disclose the body is formed of a silicon substrate. Scherer only discloses that the substrate is made of ceramic (alumina or zirconia) as set forth in claim 25.

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to manufacture the body substrate of Scherer with silicon instead of ceramic, alumina or zirconia.

The rationale is as follows: One of ordinary skill in the art would have been motivated to make the body substrate of Scherer with silicon instead of ceramic, alumina or zirconia through routine lab experimentation and optimization in order to improve the electrically characteristics of the substrate body. Additionally, it has been held to be within the general skill of a worker in the art to select a known material having different chemical bonding structures on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416 (CCPA 1960).

Regarding claims 26-27 and 30, Scherer discloses all of the elements of the claims except for that the cavity is formed by etching method as claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the cavity of Scherer through etching technique as recited in claims 26-27 and 30.

The rationale is as follows: One of ordinary skill in the art would have been make the cavity of Scherer through etching technique as set forth, supra as a result of routine engineering optimizing. Applicant has shown no criticality for such as any unexpected results deriving from such. Additionally, Applicants' claim language is not found to be persuasive as a process limitation (etching). It should only be accorded weight to the extent that it affects the structure of the cavity structure of the integrated interconnect assembly since claims are directed to an "integrated interconnect assembly", per se. Furthermore, it should be noted that "[d]etermination of patentability in 'product-by-

process' claims is based on product itself, even though such claims are limited and defined by process, and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior art product was made by a different process", In re Thorpe, et al., 227 USPQ 964 (CAFC 1985). It should also be noted that a "[p]roduct-by process claim, although reciting subject matter of claim in terms of how it is made, is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations", In re Hirao and Sato, 190 USPQ 685 (CCPA 1976).

5. Claims 28-29 and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scherer in view of Hamburgen et al (US. 5,243,756).

Scherer does not disclose a plurality of bond pads as set forth in claim 28 (particularly, four bond pads as recited in claim 29; at least one bond pad includes a raised surface spaced from the cavity, claim 32).

Hamburgen et al discloses an integrated circuit having a cavity including at least 4 bond pads (figure 1) along the inner wall of the cavity.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the integrated interconnect (IC's) assembly of Scherer with a plurality bond pads as set forth, supra as taught by Hamburgen et al.

The rationale is as follows: One of ordinary skill in the art would have been motivated to provide the integrated interconnect (IC's) assembly of Scherer with a plurality bond pads as set forth, supra as taught by Hamburgen et al through an obvious

duplication of parts in order to improve the electrically characteristics of the Integrated interconnect apparatus.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 10-14 and 21-35 are rejected under 35 U.S.C. 102(e) as being anticipated by Bonin et al (US. 6,665,151 B1).

The applied reference has a common *** with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Bonin et al discloses an integrated interconnect (IC's) assembly for a microstructure having a microstructure body 32 including a microstructure cavity 48 having a bond pads (36's) formed on an inner wall of the microstructure cavity and conductive coupled to leads 52's on the microstructure body, all as set forth in claims 10 and 12-13.

Claim 11:

Bonin et al also discloses a nested body 24 supported in the microstructure cavity and having bond pads 56 as claimed.

Claims 14 and 21:

Bonin et al discloses the first body is a slider 24 having a transducer electrically coupled to the bond pad on the first body.

Claims 22-23 and 34:

Bonin et al discloses that the microstructure body includes a base portion 32 and a floating portion 24 coupled to the base portion and the microstructure cavity 48 is formed in the floating portion as set forth in claims 22-23 and 34.

Claim 24:

Bonin et al further discloses the bond pad is raised from a surface of the inner wall of the microstructure cavity as recited in claim 24.

Claim 25:

Bonin et al discloses that the microstructure body is formed of a silicon substrate (column 3, lines 6-7).

Claims 26-27 and 30:

Bonin et al discloses that the microstructure is etched to form the cavity as set forth in claims 26-27 and 30 (column 3, lines 6-7).

Claims 28-29 and 31-32:

Bonin et al discloses there are at least 4 bond pads as recited in claims 28-29 and 31-32.

Claims 33 and 35:

Bonin et al also discloses that the microstructure forms a MEMS actuator for a slider 24 of a data storage device and the slider 24 disposed in the cavity 48 having a bond pad 56's adapted to electrically interface with the at least one bond pad 36's of the cavity.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen T Cao whose telephone number is (703) 305-3796. The examiner can normally be reached on Mon - Thurs (7:30 - 6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Allen Cao
Primary Examiner

AC
January 10, 2004